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THE RHODE ISLAND MEDICAL JOURNAL



Owned and Published by the Rhode Island Medical Society. Issued Monthly

VOLUME XI
No. 11.

Whole No. 230 PROVIDENCE, R. I., NOVEMBER, 1928

PER YEAR \$2.00
SINGLE COPY 25 CENTS

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THE RHODE ISLAND MEDICAL JOURNAL

The Official Organ of the Rhode Island Medical Society
Issued Monthly under the direction of the Publication Committee

VOLUME XI { Whole No. 230 PROVIDENCE, R. I., NOVEMBER, 1928
NUMBER 11 }

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ORIGINAL ARTICLES

POST-OPERATIVE COMPLICATIONS. II. HYSTERECTOMY COMPARED WITH APPENDECTOMY.*

BY ALBERT H. MILLER, M.D.,
PROVIDENCE, R. I.

It is a matter for regret that in Providence, as in most other centers, the importance of medical records is not appreciated. Year after year a great number of cases pass through our hospitals. Through lack of efficient record systems, the scientific value of this work is forever lost. The data laboriously collected from our present inefficient systems provide amusement rather than information. There is no limit to the number of problems which might be solved with the aid of efficient records. What is the most efficient method of skin sterilization? Has the use of rubber gloves lessened wound infection? Is a complete breast amputation justifiable in a patient over 60 years of age? Is cholecystectomy preferable to cholecystostomy? Such questions could be answered with mathematical accuracy by an efficient system of medical records.

My own records include only the comparatively small number of cases with which I come in contact at the time of operation. Patients are examined before operation and the operative risk is evaluated. During the operation, data of interest from the point of view of the anesthetic, the operation, or the patient is entered on a chart. Two weeks after the operation, the cases are checked up for complications and fatalities. Each chart bears its consecutive number. The cases are cross indexed by name, and for complications and mortality. The cross indices consist simply of lists of numbers and are made with little expenditure of time. Tabulation of any other data which is contained in the records is made in the same way and is as readily compiled. This is

the numerical system of records reduced to its simplest form.

The first paper of this series, which was published in the *Rhode Island Medical Journal* of December, 1927, compared the results of anesthesia with nitrous oxid oxygen and with ether in a series of 5,000 cases. It was found that circulatory complications, including phlebitis, coronary, cerebral, pulmonary and mesenteric embolism, and cerebral hemorrhage, occurred more frequently after gas-oxygen than after ether anesthesia. Pulmonary complications, including pneumonia, bronchitis, pleurisy, pulmonary abscess and pulmonary edema, also occurred with greater frequency following gas-oxygen than after ether anesthesia. Nausea and vomiting was considerably more prevalent after ether than after gas oxygen.

In the present paper, the cases of hysterectomy and appendectomy in a series of 8,000 consecutive operations have been tabulated. As in the previous series, these cases were checked up two weeks after operation for complications and fatalities. Significant complications which occurred at a later time have been included. From this tabulation, it is hoped that two questions may be answered: 1. Does the percentage of pulmonary and circulatory complications vary with the nature of the operation? 2. Is it advisable to remove the appendix in the course of a hysterectomy?

In tabulating the appendectomies, those done in the course of gastro-enterostomy, operations on the gall bladder, operations for hernia, or gynecological operations in which the abdomen was opened, have not been included. The result is a series of cases in which appendectomy was done alone or in combination with some minor operation. The total, 934 appendectomies, comprises 686 clean cases and 248 drained cases. The anesthetic was gas-ether in 837 cases, gas-oxygen in 62, ethyl-chloride-ether in 33 and oxygen-chloroform in 2. Gas-oxygen was chosen when clearly indicated, as in nephritis, diabetes or in the presence of respiratory infection. Following the 934 appendectomies, pulmonary and circulatory complications occurred more frequently after gas-oxygen than af-

*Read before the Amos Throop Club on February 14, 1928, and before the Providence Medical Association on May 7, 1928.

ter ether in much the same proportion that resulted from the previous tabulation. The mortality of the 686 clean cases was .58%. The four deaths were due to peritonitis, to pulmonary embolism, and, in two cases, to pneumonia. One of the deaths from pneumonia occurred in the case of an old man who had complained that a nurse had removed the heavy woolen shirt which he was accustomed to wear. The other patient had a well recognized streptococcus respiratory infection previous to the operation. The mortality in the 248 drained cases was 11%. More than two-thirds of these deaths were attributed to peritonitis already present at the time of the operation.

Five hundred fifty-six hysterectomies included 450 supra-vaginal operations, 79 pan-hysterectomies, and 27 vaginal hysterectomies. Gas-ether was used 511 times, gas-oxygen, 34 times, and ethyl-chloride-ether, 11 times. There were no complications following the hysterectomies done under gas-oxygen. One of the patients died from shock and hemorrhage on the fifth day after operation. Following the operations done under gas-ether, there was a notably larger proportion of circulatory complications and a much smaller proportion of pulmonary complications than would have been expected from a study of the previous tabulation. In 450 supra-vaginal hysterectomies, the mortality was 3.55%, in 79 pan-hysterectomies, 6.34%, and in 27 vaginal hysterectomies, 3.7%. In 250 supra-vaginal and pan-hysterectomies where the appendix was not removed, the mortality was 4.4%, but in 279 cases of hysterectomy combined with appendectomy, the mortality was 3.6%. These figures are readily explained by consideration that the appendix is not usually removed after a long or difficult hysterectomy. The mortality of supra-vaginal hysterectomy was greater in the cases where the appendix was not removed. In the pan-hysterectomies, the mortality was greater when appendectomy was combined with this operation.

The greatest number of deaths following hysterectomy were attributed to cardiac failure. One patient, a victim of toxic goiter, died from thyroidism following supra-vaginal hysterectomy. After the operation, there was a rapid rise in temperature and pulse rate, with high color, dyspnea, and fibrillation. Whether the evident effect on the thyroid secretion resulted from the operative manipulation or from the administration of the anesthetic is un-

determined. The case leads to a suspicion that other deaths following hysterectomy, accompanied by a rapid increase in the pulse rate and disturbance of the heat center, may be due to thyroidism even if the diagnosis of goiter has not been made previous to the operation or if symptoms of goiter have not been previously present.

From this tabulation, it appears that, while pulmonary and circulatory complications may occur more frequently after gas-oxygen than after ether, the percentage of these and of other complications are markedly affected by the type of operation performed. In answer to the second of the two questions propounded at the beginning of the paper, appendectomy is certainly indicated in selected cases where hysterectomy is being done but more frequently with supra-vaginal than with pan-hysterectomy.

Tabulation I
APPENDECTOMY

	Cases	Deaths	Percent.
Clean	686	4	.58
Drained	248	38	11.
Total	934	42	4.5

Tabulation II
HYSTERECTOMY

	Cases	Deaths	Percent.
Supra-vaginal	201	8	4.
With Appendectomy.....	249	8	3.25
Total	450	16	3.55
Pan-hysterectomy	49	3	6.
With Appendectomy.....	30	2	6.66
Total	79	5	6.34
Vaginal hysterectomy.....	27	1	3.7
Total	556	22	4.

Tabulation III
COMPLICATIONS OF APPENDECTOMY

	Pulmonary			
	Gas	Oxygen	Gas	Ether
	Complica-	Mor-	Complica-	Mor-
	tions	tality	tions	tality
Pneumonia	1.60	1.60	.60	.24
Bronchitis .....	...	...	.72	...
Pleurisy .....	...	...	.18	...
Pulmonary abscess. 1.60	...	...	...	...
	3.20	1.6	1.44	.24

<i>Circulatory</i>			
Phlebitis .....	...	.48	...
Coronary embolism 1.60	1.60	...	...
Cerebral embolism 1.60	1.60	...	...
Pulmon'y embolism ...	...	.36	.36
	3.20	3.20	.84 .36

Tabulation IV

COMPLICATIONS OF HYSTERECTOMY

	<i>Pulmonary</i>	<i>Gas Ether</i>
	Complications	Mortality
Pneumonia .....	.20	...
Pleurisy .....	.40	...
Bronchitis .....	.40	...
	<hr/> 1.00	<hr/> ...
	<i>Circulatory</i>	
Phlebitis	1.20	...
Coronary embolism .....	.40	.40
Cerebral embolism .....	.20	.20
Pulmonary embolism .....	.40	.20
	<hr/> 2.20	<hr/> .80

Tabulation V

TOTAL COMPLICATIONS

	<i>Appendectomy</i>		<i>Hysterectomy</i>	
	Percent.	Mortality	Percent.	Mortality
Pulmonary	1.5	.32	.9	...
Circulatory .....	.96	.52	2.	.72
Phlebitis .....	.42	...	1.8	...
Parotitis .....	.53	...	.18	...
Ileus .....	.1	...	.54	.18
Infected wound....	1.4	...	1.08	...
Ruptured scar....	.32	...	.18	.18
Hemorrhage .....	.1	...	.54	.36
Uremia .....	.21	.21	.18	.18
Diabetic coma....	.1	.1	...	...
Jaundice .....	.1	...	...	...
Hiccough .....	.21	...	...	...
Thyroidism .....	...	...	.36	.18
Myocarditis .....	...	...	.18	.18
Cardiac failure....	...	...	1.44	1.44
Shock from Fowler position .....	...	...	.18	...
Exhaustion .....	.1	...	...	.36
Peritonitis	3.21	...	...	.18

EARLY DIAGNOSIS OF TUBERCULOSIS
RHODE ISLAND MEDICAL SOCIETY*

By HARRY LEE BARNES, M.D.

I have been asked on short notice to make a few remarks to supplement the lesson of the film, "Let the Doctor Decide."

This campaign of the National Tuberculosis Association for the early diagnosis of tuberculosis

is very timely, because a large percentage of tuberculous patients are diagnosed too late to save them or even save their families from infection.

The campaign resolves itself into two parts:

1st. Popular education which will get the patients to the physicians earlier.

2nd. Medical education which will help physicians to recognize the disease earlier. It is the second part of which I would speak.

Twenty-five to thirty per cent of our cases come from families which have previously had a loss from tuberculosis which means that all the supposedly healthy members of a family should be examined shortly after a case is found. Tuberculosis develops so slowly that the second death from tuberculosis is frequently 5 to 10 years after the first, so that annual examinations for 10 years is a reasonable minimum for adults.

The results of the examination of 157 contacts by the Sanatorium staff have been as follows:

	No. of cases	Percent.
Active tuberculosis	10	6.3
Inactive or healed tuberculosis....	13	9.6
T. B. suspects.....	35	22.3
Negative	97	61.8
	155	100

These figures are evidence that examination of family contacts is one way to get the cases early.

General practitioners should avail themselves of x-ray examinations of the chest much more frequently than they do.

All chronic patients who cough or expectorate, all cases of hemoptysis, idiopathic pleurisy, underweight, asthma, etc., should be regarded as suspicious and the sputum should be examined; first, because this examination is simplest and cheapest. If the sputum is negative, then an x-ray examination should invariably follow.

The x-ray will show tuberculosis in the lungs more accurately than physical examination.

Of 592 of our positive sputum patients, in 380, or 64 percent, the x-ray evidence of disease was more extensive than the physical signs.

How often does the x-ray fail to reveal the lung lesion in positive sputum cases? In over 2000 of our patients with positive sputum, the x-ray has shown negative films in only 5 or once in over 400 cases. This is not an absolute proof of the failure

*Read before the Providence Medical Association March 5th, 1928.

of the x-ray, because there may be an error in laboratory reports once in 400 times, and even though the laboratory reports should be infallible, the tubercle bacilli in the sputum of these 5 patients may have come from tuberculosis of a bronchial lymph node or from the larynx. If the x-ray picture is taken shortly after the spread of tuberculosis to new areas, it will not show the tuberculosis until the tubercles have had several weeks to develop, but this is rare in practice. Of several hundred negative sputum patients who also had negative x-rays, we have known only 5 who later developed clinical tuberculosis, so that, if we count the 5 positive sputum cases at the time of the x-ray and the additional 5 patients who later became unmistakably tuberculous out of over 1000 negative sputum cases, we have only 10 out of over 3000 cases in which we know that the x-ray films failed to show tuberculosis in the lung.

A negative physical examination and a negative sputum are no safeguard against overlooking tuberculosis, but entirely negative films make the presence of active pulmonary tuberculosis extremely unlikely.

Before the days of x-ray, it was a great responsibility to tell patients with suspicious symptoms that these symptoms were almost surely not due to tuberculosis.

There are many cases in which the lung films show slight x-ray shadows which leave us in doubt as to whether or not they are tuberculous, but if the films are of good quality and found clear by experienced interpreters, the patient is free from clinical tuberculosis in the lung, about 99 times out of 100, in my experience.

If we have a series of suspicious cases in which the sputum reports are negative, what are the chances that the x-ray will find tuberculosis? Well, of course, this depends on the cases, for there are degrees of suspicion. Some cases are only slightly suspicious, say 20 per cent, while others are 80 per cent suspicious. Of the last 100 suspicious negative sputum patients sent to Wallum Lake for x-ray, in 12 or 12 per cent the x-ray films furnished evidence of tuberculosis, which was considered sufficient for diagnosis.

The x-ray is far more helpful in finding early tuberculosis in the lung and far more reliable in excluding tuberculosis in the lung, than is physical examination and it should be invariably used in doubtful cases.

MISCELLANEOUS

INTERNATIONAL HEALTH

The world grows smaller as it grows older. Transportation facilities are bringing all parts of the globe into close contact each with the other and trade today is world wide. Now London and San Francisco are in many ways nearer to each other than were Athens and Sparta in the days of their glory. There is beginning a transformation of the heterogeneous peoples of the world into one great nation, a transformation which is inevitable; cynics, chauvinists, and "nationalists" to the contrary notwithstanding.

In the van of this movement is the medical profession. Without political aspirations, with no axes to grind, the physicians of the world can progress unhampered to mutual world-wide understanding. Today progress in medicine is truly international. In one field of endeavor, however, medicine is closely linked with governments and legislation, namely, the field of public health. And now we see the nations deliberately planning and carrying out better co-operation in this field. Whatever may be one's political bias regarding his opinion of the League of Nations one cannot but approve of the work of the Health Organization. Here we see even our own country, whose non-adherence to the League has been, many believe, one of the main obstacles in the way of the establishment of a real international understanding, a full member. The headquarters of the Organization are in the Secretariat at Geneva and a far eastern station is maintained at Singapore. This latter station is of value in the early detection and reporting of epidemics which originate in the far east. The Health Section of the General Secretariat of the League keeps in constant touch with the public health authorities of all nations and is of the greatest service in the control of epidemics. There is also an Advisory Committee which sits at Paris and whose most important duty is the drafting and discussion of international agreements or conventions on health matters.

International co-operation and understanding mean peace; and lasting peace can be attained in no other way. It is a satisfaction therefore to see the medical profession playing so great a part in a movement which is of such importance to the entire human race.

THE RHODE ISLAND MEDICAL JOURNAL

Owned and Published by the Rhode Island Medical Society
Issued Monthly under the direction of the Publication Committee, 106 Francis Street

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Advertising matter must be received by the 10th of the month preceding date of issue.

Advertising rates furnished upon application to the business manager, CREIGHTON W. SKELTON, M.D., 166 Broad St., Providence, R. I.

Reprints will be furnished at the following prices, providing a request for same is made at time proof is returned: 100, 4 pages without covers, \$6.00; each additional 100, \$1.00; 100, 8 pages, without covers, \$7.50; each additional 100, \$2.80; 100, with covers, \$12.00; each additional 100, \$4.80; 100, 16 pages, without covers, \$10.50; each additional 100, \$3.00; 100, with covers, \$16.00, each additional 100, \$5.50.

SUBSCRIPTION PRICE, \$2.00 PER ANNUM. SINGLE COPIES, 25 CENTS.

Entered at Providence, R. I. Post Office as Second-class Matter.

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EDITORIALS

JAMES HENRY DAVENPORT

After months of illness, endured with calm patience, Dr. James Henry Davenport died in the Jane Brown Memorial Hospital on October 15, in his sixty-seventh year. Thus passed away one of Rhode Island's most noted physicians. In the hospital to whose service and up-building he had devoted the best energies of his active career, he spent what remained to him of life and died at

last in the midst of his older colleagues who still remain and those others, his younger contemporaries, who had learned to revere him as man, physician and friend. The story of his life is not unlike that of most physicians. There is about it nothing spectacular—a chronicle of quiet, unselfish, unremitting labor on behalf of those to whom he had devoted his time and his talents. Of him, as of the goodly company he has joined, it may be said in truth, *morientes vivimus*—though dead they still live in the golden memory of the benefactions they have strewn along the pathway of the years. It is good for the physi-

cians of Rhode Island to have had for so long in their midst a man like Dr. Davenport.

Although devoting his professional efforts to a special department of surgery, Dr. Davenport found time for other interests, social, civic and literary. One of the founders of the University Club, he was its President from 1922 to 1923. He was interested in the beginnings of the Turks Head Club and did much to further the development of the Biological Department of Brown University, his Alma Mater. Even in politics he played a part, for in 1912 he was elected to the Providence City Council. He was a member of the Providence Art Club, the School of Design, the Providence Athenaeum, of which he was at one time a director. His love of books is well known and to the Library of the Rhode Island Medical Society he donated his splendid collection of the non-professional writings of physicians, a gift as generous in motive as it is symbolic of his culture. In 1910 the Providence Medical Association made him its President and he was also a member of the Massachusetts Medical Society, the Boston Medical Library, the Clinical Club, the Amos Throop and Friday Evening Medical Clubs.

These activities, however, were but the outer trappings of the man. His inner qualities, his kindliness, his urbanity, his humor, his charity, were known only to his friends and patients. Dr. Davenport belonged by taste and tradition to the small and rapidly disappearing band of medical humanists who brought to the healing art the spirit and savor of Ely and Noyes who in their day graced the medical profession in Rhode Island. It was his large and tolerant humanity which begot the devotion of his patients and the loyalty of his friends and which in the future will inscribe the name of James Henry Davenport upon the bright and honorable roll of beloved physicians.

A MEDICAL CONGRESS

As many of our readers know, the Connecticut State Medical Society has for a number of years held an annual medical congress which is designed to give an opportunity for the physicians of the state to hear important medical and surgical subjects discussed by leaders in their respective fields; also to witness clinical demonstrations and to have

round table conferences. Such a congress has each year increased in its usefulness and every year increasing numbers of physicians from all over New England have attended. Should not Rhode Island have a similar opportunity for its physicians? We believe there are many physicians not connected with hospitals who have very little opportunity for learning at first hand the many steps of progress that medicine is making each year. Should not the Rhode Island Medical Society consider holding a similar congress; perhaps, not every year, but by arrangement with other New England states such a congress might be held in different years at different large centers in the various New England states. The problems of both the city and the rural practitioner in the various New England states are quite similar, and we believe that New England should make a co-operative effort that would make the best medical thought and teaching easily available at definite periods for all those trying to advance the practice of medicine within the borders of New England. Let us consider making a co-operative medical program for New England, just as industry has tried to develop a co-operative industrial program.

RESEARCH OF EXPERIENCE

One hears too often an expression of discontent because we have no research laboratories that are highly endowed and of a rather specific and limited field. There seems to prevail the feeling that progress in medicine can only be made by sealing oneself in a laboratory and by investigating some problem involving an elementary science as, for example, chemistry.

To those qualified for such investigative work there is little to offer here. Not many physicians, however, can carry on such a study. We do have plenty of opportunities for clinical and even physiological research that are important and for which most physicians are equipped by training. Such opportunities are being passed over as we long for something that we do not have.

One of the first requisites for a clinical study is a careful and accurate history and physical examination. How many doctors take such a record? Yet with good records an office practice of a few years' duration would yield many facts that should be recorded. The clinical discovery that pernicious anemia is uncommon in pigmented

people is of inestimable value. Other problems just as important are waiting to be solved and will be if we utilize our splendid opportunities.

DOCTOR JAMES RAYMOND MORGAN 1841—1928

Doctor Morgan, one of the oldest physicians in the state, died of bronchial pneumonia at the Rhode Island Hospital, September 25; had he lived but three days longer he would have been 81.

As a committee has been appointed to prepare an *In Memoriam*, the story of his life will not be given here except to note that for nearly fifty years he was engaged in general practice in Providence, but gave special attention to Dermatology. He was for many years a visiting physician at the Rhode Island Hospital, and it was through his influence that the department of dermatology was established there.

By his will \$15,000 is left to the hospital.

Very impressive funeral services were held at the Beneficent Congregational Church, of which Doctor Morgan was a member. A goodly representation of his fellow-members of the Medical Society, nearly all of whom had been associated with him in work at the Rhode Island Hospital, attended the exercises.

Thus by their presence Doctors Harlan P. Abbott, Frank P. Capron, R. H. Carver, Frank T. Fulton, Margaret S. Hardman, Arthur H. Harrington, Edwin B. Harvey, John W. Keefe, Eugene P. King, Lucius C. Kingman, Charles H. Leonard, George S. Mathews, John F. McCusker, Jesse E. Mowry, Walter L. Munro, John M. Peters, Vito L. Raia, Louisa Paine Tingley, Stephen A. Welch and William R. White, in an impressive and significant manner attested their respect and esteem for their veteran associate.

The burial was at Cedar Grove Cemetery, New London.

STREPTOCOCCUS MENINGITIS— REPORT OF EIGHT CASES

H. EVERETT SMILEY, M.D.
PROVIDENCE, RHODE ISLAND

During the year 1927 there occurred in the Providence City Hospital, eight cases of acute meningitis due to a hemolytic streptococcus, all of which

proved fatal. A study of the histories of these cases showed a striking similarity in the onset as well as the clinical course, in that all of the cases showed three definite stages, namely:—an acute infection, followed by a latent period, during which the patient was free from any symptoms; to be succeeded by an insidious onset of meningitis. Seven of the cases were in children, and in these the infection varied in that some were scarlet fever, some were otitis media, and others were erysipelas. The eighth case was that of an adult whose history was so sharply different from that of the seven children, that it falls into a definite class by itself.

The lesson to be learned from these case-histories, it seems to me, is that any acute infection caused by a streptococcus must be regarded as a potential case of meningitis and a guarded prognosis given accordingly. The cases should be carefully watched with a view to detecting the earliest signs of complicating meningeal symptoms. Further with any rise in temperature, repeated blood cultures should be taken, for in all probability, the infection of the meninges is hematogenous in origin rather than by direct extension. The following case reports illustrate the relationship between an acute infection and extension to the meninges.

CASE I—HOUSE NO. 23819 J. N.

The patient was a four year old boy giving a history of having had "grippe" with cervical adenitis three weeks before admission, from which he apparently completely recovered. Eight days before admission to the hospital, he was suddenly seized with chills and fever which persisted. Three days before admission, he complained of a stiff neck. He was seen by a local doctor who gave him anti-meningococcus serum and referred him into the hospital. Physical examination showed stiffness of the neck with positive Kernig and Brudzinski signs. A lumbar puncture showed cloudy fluid under slight pressure with 792 cells per cubic m.m. most of which were polynuclears, and a strongly positive globulin test. Because direct smears showed no organisms, anti-meningococcus serum was given. A culture of the spinal fluid showed streptococcus hemolyticus. Two days after admission the patient died and on autopsy showed marked thickening of the pia-arachnoid membrane with cloudiness of the ventricular fluid.

Direct smears from the pus about the base of the brain showed streptococci. Cultures from the spleen and spinal fluid showed the presence of streptococcus hemolyticus.

CASE II—HOUSE No. 23912 G. P.

The patient was a boy of seven years, giving a history of a discharging ear, which three weeks before admission "opened by itself," after hot applications. After a week the discharge stopped. During the three weeks preceding admission the child had a fever. He was sent to the hospital with a probable diagnosis of pneumococcus meningitis. Examination on admission showed the right ear drum to be red and bulging, and the eye grounds showed an optic neuritis. The patient had a stiff neck and showed a positive Kernig and Brudzinski sign. A lumbar puncture showed cloudy fluid, polynuclear leukocytes and no organisms. Anti-meningococcus serum was given. The spinal fluid was inoculated into a mouse and cultured in broth and on blood agar. All the cultures proved sterile and the mouse survived the inoculation. On the fourth day after admission cultures from the spinal fluid showed hemolytic streptococci, and a week later the child died. Autopsy showed a very heavy exudate covering both sides of the brain. Cultures from the right middle ear and from the subarachnoid pus at the base of the brain showed the presence of a non-hemolytic streptococcus while cultures from the ventricular fluid showed the presence of a hemolytic streptococcus. It is apparent in this case that there was a double infection.

CASE III—HOSPITAL No. 24211 A. A.

The patient was a boy of six years with a history of scarlet fever four weeks before admission, with desquamation two weeks later, at which time he appeared well. One week before admission he complained of earache and swollen glands in the neck. The ear drum ruptured "of itself" and the ear continued to run. The patient's only complaint was headache. On admission the patient showed only slight tenderness over the right mastoid. A mastoidectomy was done. A lumbar puncture done on the day of admission proved sterile as did also a blood culture the day after admission. On the third day after admission a lumbar puncture showed cloudy fluid with a cell count of 1,968 cells most of which were polynuclear. The following day (four days after admission) the patient died. Autopsy showed a very extensive fibrino-purulent ex-

udate covering the base of the brain. Cultures from the ventricular fluid and from the heart's blood showed streptococcus hemolyticus. Examination of the right middle ear proved negative.

CASE IV—HOSPITAL No. 24271 E. P.

The patient was a boy of four years. Two days before admission the father of the patient noted that the child did not play normally and that on the boy's face there was a red area extending from the nose to the ear which was apparently spreading. The patient was sent to the hospital with a diagnosis of facial erysipelas. Physical examination showed hypertrophied tonsils and adenoids in addition to the rash. He was given convalescent erysipelas serum and apparently recovered from the erysipelas. Ten days after admission the patient showed an unexplained rise in temperature which was thought to be due to a throat condition or to cervical adenitis. Two weeks later the rise in temperature still persisted and remained unexplained. Examination of his chest, ears and urinary tract proved negative. A blood culture was taken and proved sterile. Because the tonsils were enlarged, tonsillectomy was done, thinking that this might be the cause of the temperature. The day after the operation the temperature was still elevated and a blood culture which had been sterile the day previous, now showed hemolytic streptococci (after 48 hours incubation). Four days later or 28 days after admission the patient began to show signs of meningeal irritation. A lumbar puncture was done and showed the spinal fluid to be under pressure and cloudy. Direct smears showed polynuclear cells and streptococci which on subsequent culture proved to be hemolytic. Two days later the patient died, and autopsy showed a thick purulent exudate covering the brain which was practically a membrane. The ventricular fluid was very cloudy and threw down a heavy sediment of pus cells on standing. Cultures of the ventricular fluid and also of the blood showed hemolytic streptococcus.

CASE V—HOSPITAL No. 24431 J. W.

The patient was a female child of two months. The past history was negative except for a discharging ear one month before admission which lasted for ten days and then apparently "cleared up." The day before admission the patient complained of fever and vomiting, which however was not projectile. On admission the right ear drum could not be seen. A lumbar puncture showed a

cloudy fluid with 970 cells, which direct smear showed to be polynuclear leukocytes with streptococci. Anti-streptococcus serum was given intraspinally. Lumbar punctures were done on successive days, but the fluid continued to get thicker. Four days after admission the patient died, and autopsy showed a large pocket of pus in the middle fossa. Both middle ears showed increase in serum and pus. The brain was extremely soggy and was infiltrated throughout, with pus which was especially prevalent in all the cavities of the brain. Cultures taken from the ventricular fluid and from the blood and spleen all showed the presence of hemolytic streptococci.

CASE VI—HOSPITAL No. 24506 P. H.

The patient was a female child of four years. One brother died of scarlet fever at home about one week before the patient was admitted, and another brother was convalescing during the onset of the patient's illness. Two weeks before admission the patient complained of sore throat, vomiting, fever and a "running nose," followed the next day by a rash which appeared first on the chest and then spread rapidly over the whole body. On the day before admission the patient complained of pain in the left ear. Both ear drums were lanced, liberating pus from the left ear and serum from the right ear. On admission, examination showed discharging ears, the left being worse than the right with probable involvement of both mastoids. Three days after admission a bilateral mastoidectomy was done. Cultures from the ears showed streptococcus hemolyticus. Following the operation the temperature dropped and the patient seemed to improve. Two days after the operation the blood culture proved sterile. Both mastoids drained for over a month when on the 43rd day after operation the patient appeared to be very listless. The following day the temperature rose to 101°. Examination showed a mucoid discharge from the left ear. The right ear was dry, the post auricular wounds were clean. A blood culture, taken the next day, proved sterile. The following day a lumbar puncture was done and showed opalescent fluid under diminished pressure. The child appeared very drowsy and showed a stiff neck with positive Brudzinski signs. Anti-streptococcus serum was given intraspinally. A culture from the spinal fluid showed hemolytic streptococci. The patient daily became worse and successive lumbar punctures yielded more and more

cloudy fluid. Anti-streptococcus serum was given both intramuscularly and intraspinally, but the patient died. No autopsy was obtained.

CASE VII—HOSPITAL No. 24678 G. M.

The patient was a male infant of two months, that before admission had been circumcised. Four days after the operation there was a marked local induration at the site of operation and six days later there was a diffuse inflammation of the skin extending to both thighs. The patient was admitted with a diagnosis of erysipelas and convalescent serum was given. The following day the temperature still remained high and a blood culture showed the presence of hemolytic streptococci. The inflammation of the skin continued to spread and a second blood culture also showed the presence of hemolytic streptococci. A lumbar puncture was done which yielded a clear fluid which proved sterile on culture. More convalescent erysipelas serum was given but the patient rapidly became worse and six days after admission died. At autopsy cultures from all the organs of the body as well as the brain and the blood stream showed hemolytic streptococci. Spinal fluid obtained post-mortem was cloudy and direct smear showed chains of streptococci, which on culture proved to be hemolytic. There was also a general peritonitis due to the same organism.

CASE VIII—HOSPITAL No. 24295 A. M.

This patient was a female adult aged 29 with a history of discharging sinuses in the head for a period of ten years. Her history otherwise was negative. Two weeks before admission the patient complained of headache and pain in the neck and spine. The neck was rigid and she frequently vomited after meals. Examination of the eyegrounds showed bilateral secondary optic atrophy. The blood vessels were tortuous, but there were no hemorrhages. The left ear was discharging. There was a discharging sinus in the back of the occiput and the scalp around the sinus was boggy. There was another deeper discharging sinus just posterior to the left mastoid. A lumbar puncture showed the spinal fluid to be under slight pressure and slightly cloudy. There were 218 cells per cubic m.m. most of which were polynuclear. Direct smear of the sediment showed an assorted flora but no predominant type of organism. Culture proved sterile. Anti-meningococcus serum was given intraspinally.

ly. Two days after admission a second lumbar puncture was done, yielding a fluid similar to the first, culture of which was also sterile. Examination for tubercle bacilli proved negative. More anti-meningococcus serum was given. On the third and fourth days respectively the patient seemed to improve and more anti-meningococcus serum was given. On the fifth day there was a profuse discharge from both sinuses. Because of the long duration of the disease with negative smears and cultures it was suspected that the case was tuberculous meningitis. The patient complained only of pain in the legs and along the spine and at times appeared disoriented. Twenty-seven days after admission the patient died.

Autopsy showed a markedly thickened calvarium, on the under side of which and corresponding to a similar area on the outside of the dura, was a fibrino-purulent exudate, about $3\frac{1}{2}$ inches in diameter. Direct smears from this pus showed the presence of streptococci. The dura in this area was thickened, the rest of the dura being of normal appearance. It was apparent that the pus from this area drained through the sinus posterior to the mastoid. The superior surface of the brain showed little that was abnormal. Examination of the base of the brain however showed adhesions tying down both poles of the temporal lobes. Part of the base of the brain involving the pituitary showed necrotic softening. Smears and cultures from the pus at the base of the brain and from the circular sinus about the sphenoid bone showed hemolytic streptococci.

An explanation of the above case is probably that the patient had a chronic extradural abscess communicating with the outside through the sinus in the skull. Two weeks before admission this pus had extended beneath the dura and set up an acute inflammation of the meninges.

THERAPEUTIC PNEUMOTHORAX*

By JOSEPH ROSENBLATT, M.D.

WALLUM LAKE, R. I.

Induced pneumothorax as a therapeutic measure for pulmonary tuberculosis has been practically universally established for many years. My

only excuse for presenting this subject at present is because, due to the fact that the majority of general hospitals refuse to treat pulmonary tuberculosis, the practice of pneumothorax is practically limited to tuberculosis institutions and resorts, and to a few specialists in tuberculosis, and the majority of physicians rarely have an opportunity to familiarize themselves with this procedure.

This treatment will save life and restore to working capacity some patients in whom the prognosis is otherwise hopeless, and in some it is a palliative measure to prolong life. Unfortunately, however, the number of cases suitable for this treatment is relatively small.

The classical indication for pneumothorax treatment is a one-sided lesion in a patient who is not doing well under the routine rest and fresh air treatment. But a case with a limited lesion on one side and an extensive and progressive lesion on the other side, may be considered a suitable case for treatment on the worse side. Pneumothorax may be indicated as an emergency measure in bilateral cases with severe hemoptysis, when it is known from which side the blood is coming. The best results are obtained in patients with moderate lesions on one side without extensive cavities and with only moderate activity. These patients have considerable resistance to the disease, but not enough to overcome it without assistance which is rendered by this treatment. Cases with very severe toxemia usually do not get much benefit, but occasionally a spectacular case may be seen. We treated some cases with acute pneumonic tuberculosis, but the treatment was ineffective.

The percentage of cases suitable for treatment would depend upon the type of cases admitted to the institution and how conservative or radical the physicians are in selecting their cases. At Loomis Sanatorium¹, where they admit patients in all stages, but only those who have some chance for improvement, they report from 10 to 15% of all cases suitable for this treatment. At Wallum Lake we treated about $4\frac{1}{2}\%$ of the cases admitted, but we admit many cases who are entirely hopeless, some cases of non-pulmonary tuberculosis, and a number of children who hardly ever have a lesion suitable for such treatment.

*Read at the quarterly meeting of the Rhode Island Medical Society, at the State Sanatorium, Wallum Lake, R. I., Sept. 6, 1928.

The principle upon which this treatment is based, is local rest of the diseased lung. Air is introduced between the parietal and visceral pleura, which acts as a splint for the diseased organ, and at the same times compresses cavities and promotes fibrosis and healing. As the air is absorbed through the pleural lymphatics, frequent refills are required. The amount of air introduced and the frequency of the refills are controlled by the intrapleural pressure as observed on the water manometer, which is an essential part of the pneumothorax apparatus, and by frequent fluoroscopic examinations showing the amount of collapse obtained. In the average case 500 to 600 cc. of air is injected at each operation, and refills are done twice a week for the first two weeks, once a week for about two months, and every two weeks after that.

There is some difference of opinion as to how much collapse of the lung is desired. J. B. Murphy², who was the first to induce pneumothorax in this country, advocated an absolutely complete and prompt collapse of the entire lung. Barlow and Kramer³, on the other hand, advocate the so-called "selective collapse," which consists of introducing very small amounts of air with the idea of collapsing the diseased part of the lung only. In our practice, we find that a moderate collapse is always necessary, but the outcome depends mostly on whether or not the diseased part of the lung is collapsed.

The length of time that the treatment is to be continued, depends on the extent and severity of the lesion, and upon the development of complications. In a moderate case without large cavities, treatment for about two years is, to my mind, sufficient. Some cases may have to be continued much longer, and sometimes indefinitely.

The most common cause of failure in this treatment is adhesions between the parietal and visceral pleura. In some cases, the entire pleural cavity is obliterated by adhesions, so that no air can be introduced. Sometimes the pleural space is only partly obliterated and a partial pneumothorax can be induced, but the diseased part of the lung remains either uncollapsed or partly collapsed, thus rendering the treatment ineffective or only partly effective.

The technique of the treatment is very simple and does not require any unusual skill. The dangers incident to the operation itself are few, and,

with good care they are practically negligible, though some fatalities have been reported. The cause of a fatal accident is usually an air embolus introduced into a pulmonary vein. As the pulmonary veins empty directly into the left side of the heart, and from there the blood is carried directly into the brain vessels without passing a capillary bed, the embolus is easily carried into the brain. Some workers claim that patients may go into collapse on account of so-called pleural shock, but this has not been proven. I have never seen any serious accident. We had two or three cases who collapsed during the first treatment but promptly recovered. Accidents can be avoided by making the puncture over the healthy portion of the lung and not introducing any air until a marked negative pressure is observed on the water monometer.

The most common complication occurring during the course of this treatment is pleural effusion. It occurs in about 75% of cases, but it is not a serious complication, though it causes temporary acute symptoms. Some patients do better after the fluid accumulates, either because the effusion is the result of the breaking of adhesions, so that a better collapse is obtained at the time the fluid develops, or because the effusion causes fibrosis of the visceral pleura, which shrinks and causes further collapse of the lung and coaptation of cavities. A purulent effusion is somewhat more serious. In the vast majority of cases it is purely tuberculous and contains tubercle bacilli. But with proper treatment, the outcome in many cases of purulent effusion is favorable, though convalescence is prolonged. A very serious complication is a rupture of the lung, causing a spontaneous pneumothorax to superimpose upon the artificial. The outcome is usually fatal, though we have cases that recovered from this complication. An acute infection of the pleural cavity with pyogenic organisms is a grave complication but with ordinary care it rarely occurs except in conjunction with a spontaneous pneumothorax.

The results obtained would depend upon the type of cases selected for treatment. If many early and slightly active cases are selected, as is the practice in some institutions, good results are to be expected, but many such patients would recover without treatment. On the other hand, if the treatment is done only as a last resort, failure

in a large percentage of cases is inevitable. Most of our patients had far advanced disease and were definitely failing in spite of a period of rest in bed. In quite a number of cases the treatment was done as a last resort in an attempt to check hemoptysis or for a possible chance of improvement.

The first 17 cases treated in Wallum Lake were reported by Dr. Barnes and Dr. Fulton in 1913¹. The first case treated is now well and working, another patient of this group is at present employed in the Santatorium, and a third of the group worked for many years as a nurse in the Sanatorium but is unable to work at present on account of heart disease and bronchitis.

The total number of cases treated in Wallum Lake to date is 189. This includes all cases who had even a small, inadequate amount of air injected into the pleural space, but does not include those in whom the attempt failed entirely. For the purpose of considering the results, I thought it advisable to exclude those cases whose treatment began less than one year ago. The number of cases to be so considered is 160. Of these, 29 or 18% have recovered sufficiently to return to work, and 24 or 15% are working at present. Fifteen or 9% of the cases showed marked improvement lasting more than one year, but are unable to work. Eleven of these 15 cases are still under treatment and doing well, and it is hoped that most of them will be able to return to work. Forty-two patients, or 26% of the 160 cases considered, showed temporary improvement lasting from several months to one year, but relapsed later, most of them on account of a lesion in the other lung and several on account of pyopneumothorax or extra pulmonary complications, such as enteritis, laryngitis, etc. Seventy-four patients, or 46% of the 160 cases, failed to improve. In about one-half of these cases the collapse was inadequate. In some of them only about 100 cc. of air could be introduced, and the treatment was given up after a few trials.

Three cases of acute pneumonic tuberculosis failed to respond to the treatment. In the remainder of the cases, the failure was due to rapid development of a lesion on the other side or to non-pulmonary complications.

The total number of cases benefited by the treatment either temporarily or permanently is

86 or 54%. The number that derived no benefit is 74 or 46%.

These figures do not sound impressive, but recalling that the outlook without treatment was bad in all the cases, we ought to be satisfied with whatever gain we made.

REFERENCES.

- ¹Amberson & Peters. Lillenthal's Thoracic Surgery, Vol. 2, P. 342.
- ²Interstate Med. Journal, March 1914, Vol. 21, P. 226.
- ³Amer. Rev. of Tuberculosis, 1922, Vol. 6, P. 75.
- ⁴Boston Med. & Surgical Journal, Vol. 168, P. 917.

SOCIETIES

PROVIDENCE MEDICAL ASSOCIATION (Providence District Society)

The regular monthly meeting of the Providence Medical Association was held at the Medical Library, 106 Francis Street, Monday evening, October 1, 1928, at 8:45 o'clock.

Program: 1. Retinitis of Pregnancy, Dr. James W. Leech. 2. Sterile Marriages and the Medical Problems They Present, Dr. Ira H. Noyes.

The Standing Committee approved the applications for membership of the following: Rocco Abbate, John Irving Pinckney, Angelo Scorpio.

DR. PETER PINEO CHASE, *Secretary*.

HOSPITALS

THE MEMORIAL HOSPITAL STAFF OCTOBER 4TH, 1928

The meeting was preceded by a demonstration of spinal anaesthesia by Dr. Meyer Saklad on a case of acute appendicitis.

The meeting, in the Nurses' Home Auditorium, was called to order by President Wheaton at 9:45 P. M. who appointed Dr. C. H. Jameson Secretary *pro tem*. There were fifteen members present. Minutes of the last meeting read and approved.

The speaker of the evening was Dr. Meyer Saklad who discussed the modern application of spinal anaesthesia by instructive diagrams and review of cases.

Discussion was opened by Dr. A. H. Miller and continued by Drs. A. T. Jones, J. E. Kerney and C. H. Holt. Dr. Holt reported that excellent

anaesthesia was obtained on the case to which spinal anaesthesia was given. The patient experienced no discomfort, remaining in excellent condition throughout.

Dr. J. E. Kerney reported an interesting case of an elusive calculus impacted in the posterior urethra, requiring suprapubic cystotomy and subsequently perineal operation for removal.

Dr. A. H. Miller reports that the medical and surgical report is well under way. He strongly recommends that some standard classification of diagnosis be adopted and followed out by the staff.

Dr. J. L. Wheaton made a plea for co-operation of the staff in obtaining a higher percentage of autopsies. He also read a communication inviting the physicians to attend an Institute on November 8th and 9th under the auspices of the Rhode Island League of Nursing Education.

Meeting adjourned at 10:50 P. M.

C. HAROLD JAMESON, M.D.

Secretary pro tem

BOOK REVIEW

MODERN METHODS OF TREATMENT (Glendening),
C. V. Mosby Company, Publishers, (2nd Edition.)

Is an excellent book particularly for the practitioner. The book is printed on good paper and well bound. It is comprehensive. The subjects are lengthily described and the most recently accepted methods of treatment are included.

In addition to outlining treatment of diseases of the various systems of the body the book contains chapters on many other subjects as dietetics, hydrotherapy, infectious diseases, diseases of metabolism and diseases of the ductless glands. It is a good book to own and to read.

MISCELLANEOUS

IRRADIATION AND THE BLOOD

The enthusiasms that have been aroused by the demonstrable physiologic potency of irradiation with ultraviolet rays generated in various ways call for restraint before they are permitted to

promote therapeutic procedures that may presently be discovered to be ill advised. It is better that disappointments should precede rather than follow their use. Irradiation cannot be rationally employed until its possible effects on the organism are thoroughly investigated in many directions. The antirachitic effects of exposure to ultra violet rays are so striking and easy of demonstration that there has been a tendency to expect only beneficial results from irradiation, regardless of intensity and "dosage."

Some of the effects on the blood and circulation have already been determined with sufficient accuracy to justify the proposed precautions. Not long ago it was shown by Miles and Laurens¹ that the exposure of dogs to carbon arc radiation may give rise to variable results with respect to the changes in the content of erythrocytes in the blood. Depending on the dosage, increases and decreases were noted. Their results were interpreted, however, to indicate a stimulation of the hematopoietic system. A continuation of the study, by Mayerson and Laurens², shows that changes in the plasma volume also may take place. For example, the primary result of an individual exposure was a temporary increase in the plasma with recovery to normal within a few hours. This dilution of the blood occurred again but was not augmented by further exposures, its duration being determined by the strength of dosage and the interval between successive exposures. After massive exposures a slight concentration followed the initial dilution. Repeated exposures stimulated the hematopoietic organs to produce an increased number of red cells that persisted for several weeks after the last irradiation. However, indexes of color, volume and saturation showed that the red cells in the period after irradiation are usually smaller and less saturated than before the treatment. Furthermore a progressive leukopenia may develop.

These are phenomena that must be evaluated with some caution. Mayerson and Laurens assert that erythrocytes may actually be destroyed by excessive irradiation with massive exposures. Such destruction is surely not a therapeutic desideratum. These investigators, who have had large experience in this field, believe that many of the conflicting results reported are without question due to the variation in the intensity and character of the radiation, the specifications of

which are rarely given. However, as radiation does act as a hematopoietic stimulus to the normal relatively stable organism, Mayerson and Laurens regard it as plausible at least that it would be particularly efficient in effecting regeneration in anemic conditions. The persisting uncertainty should act as a warning against undue ventures that may actually border on quackery, until further explicit knowledge is available.—*Jour. A. M. A.*, Oct. 6, 1928.

¹Miles, A. L., and Laurens, H.: *Am. J. Physiol.* 75:462 (Jan.) 1926.

²Mayerson, H. E., and Laurens, H.: The Effects of Carbon Arc Radiation on the Blood of Dogs, *Am. J. Physiol.* 86:1 (Aug.) 1928.

ACUTE PERFORATIONS OF STOMACH AND DUODENUM

In preparation for the operation, C. L. Gibson, New York (*Journal A. M. A.*, Oct. 6, 1928), suggests that patients should be given a little methylene blue (methylthionine chloride, U. S. P.) solution, as it aids in recognizing the perforation quickly. The peritoneum should be opened in a puddle of water so that the presence of gas may be detected. The perforations are practically always juxtapyloric, so that region is at once sought for and the perforation easily identified with the aid of methylene blue. Closure is best effected by means of two layers of interrupted chromicized catgut sutures applied on the Heineke-Mikulicz principle, constriction of the viscus being avoided. All fluid should be thoroughly removed. The sucker is particularly useful. Drainage is generally useless and is certainly not required in early cases, 65 per cent of which are sterile. If the suture line is not entirely satisfactory it may be covered over with some peritoneal surface, such as a flap of omentum or the round ligament, which can be dissected off for easy approximation. It is not his policy to do any more as a routine than to close the perforation, leaving subsequent events to be dealt with more intelligently and more satisfactorily at a later operation. Of course, if very obvious stenosis is present, it is wisest to add a gastro-enterostomy to the primary operation. Certain large indurated

ulcers cannot be closed by any form of suture and will require a pylorotomy. The criterion of location is the pyloric vein. Sometimes the ulcer seems to be situated right at the vein; in such cases the lesion has been classified according to the situation of the bulk of the ulcer. Duodenal ulcers give a longer history, severer symptoms and higher mortality. Gibson says that in general, patients who recover from a perforation are cured of the ulcer. The great majority are restored to good health and are free from stomach symptoms. Of the ninety-five living patients who were due to return for follow-up examination, he has reports on ninety-three, or 97.9 per cent. Nineteen patients (15.4 per cent) required a second operation and two had a second perforation. The total operative mortality in 123 cases was 18.6 per cent, twenty-three deaths. The causes of death were: peritonitis (fifteen), empyema, consequences of psychosis, collapse after getting out of bed, cardiac failure, anesthesia, subdiaphragmatic abscess and pulmonary embolism.

RECOVERY OF HUMAN OVA FROM UTERINE TUBES

Relatively little is known of the human ovum from just before the time of ovulation until after the time of implantation of the developing embryo in the uterus. Consequently the time of ovulation in the menstrual cycle in woman has been computed chiefly from the condition of the corpus luteum rather than from the finding of ova in the tubes. In an attempt to fill partly this gap in our knowledge of early human embryology, a co-operative investigation was planned by Edgar Allen, J. P. Pratt, Q. U. Newell and Leland Bland (*Journal A. M. A.*, Oct. 6, 1928), with the following objectives: (1) the recovery of ova from the uterine tubes; (2) the correlation of their condition with the menstrual history and the stage of development of the early corpora lutea (recently ruptured follicles) from which these ova had been extruded, and (3) a continuance of quantitative analyses of the amount of ovarian hormone in tissues of the human ovary. This report records the recovery of seven ova from the uterine tubes, among them one set of

twins and one case of internal migration of an ovum from one ovary to the other tube. Of more than forty operations on patients from whom material was obtained for this study, twenty-six were dated between the twelfth and the sixteenth days of the menstrual cycle, the others ranged from the first to the twenty-fifth days. While in the majority of cases recent corpora lutea could be found to account for ovulation, in one or two cases the evidence clearly points to absence of ovulation in the last several cycles. This condition, menstruation without ovulation, so common in the monkey, must be recognized as occurring in woman.

COUNCIL ON PHYSICAL THERAPY

A. U. Desjardins, Rochester, Minn. (*Journal A. M. A.*, Oct. 6, 1928), gives a short history of the organization of the council on physical therapy and discusses its scope and activities. One of the most important questions which the Council has had to consider has been the neglect of medical schools to provide adequate courses in physical therapy for medical undergraduates and graduates. Perhaps the most significant factor in preventing physical therapy from being raised to the same scientific level as other branches of medicine has been the attitude of some of the very leaders of the medical profession, who, having themselves failed to learn anything about the possible therapeutic value of physical methods of treatment, have nevertheless done everything possible to obstruct its progress. The general failure of physicians to familiarize themselves with massage and corrective exercises has given rise to several additional cults, the rapid growth of which the medical profession has foolishly tried to combat by legislative means. The only logical way of dealing with this problem is to bring physical therapy into the sanctuaries of medicine, test its therapeutic possibilities with scientific thoroughness, adopt those methods which prove sound, and teach them to the profession. Unfortunately, the present dearth of teachers cannot be overcome in a short time, and it cannot be overcome at all until far-sighted policies are adopted whereby not only adequate instruction may be provided but the field of physical therapy

may be made attractive as a specialty, and able young physicians drawn into it. In the meantime, the physicians of the country require and demand short courses of postgraduate instruction by which they may acquire the essentials of physical therapy that will enable them to treat their patients with benefit and without danger. Some institutions have already organized courses in physical therapy, while others are ready to do so as soon as it appears clear how and how much physical therapy should be taught, and as soon as qualified teachers can be found. In this direction the Council must perforce proceed slowly to avoid blunders. The question next in importance before the Council was the formulation of a code of rules to govern the submission, consideration, acceptance or rejection of devices or methods submitted by manufacturers and others. For the time being the Council has decided to limit its activities in this direction to the formulation of adequate standards of construction and operating efficiency, and the manufacturer who desires to secure for his apparatus the approval of the Council must furnish evidence to substantiate the claims advanced by him in favor of the device or apparatus submitted. Acceptance by the Council of any product of a manufacturer constitutes a valuable asset, and an increasing number of such products are being submitted for consideration by the Council. The Council has undertaken the thankless task of reviewing this literature and of preparing a nomenclature in harmony with science. For all practical purposes, physical therapy rests largely on empiric evidence, and the opportunities for experimentation are unlimited. The number of questions being brought to the attention of the Council is increasing steadily. One question which is now being considered is the rental of radium to physicians by companies controlling the supply of this valuable substance. The best results from radium can be obtained only by experts skilled in the recognition and treatment of the diseases for which the use of radium is indicated. The therapeutic use of radium by general practitioners, dermatologists, surgeons or others without special training in radium therapy constitutes a public danger. Hence, the indiscriminate rental of radium to physicians is an unsound and pernicious practice, and it is time the collective professional conscience should put a stop to it.

DIPHTHERIA PROPHYLAXIS IN FRANCE

Although a preparation has been obtained for human vaccination against diphtheria, a point that is not very well known is the antigen value of such a mixture; therefore, when this preparation is injected for vaccination, the immunizing effect produced is not known. Of course, certain experiments could be made in animals to discover the value of immunization, but this would require a great number of animals over a large period of time, and what can be easily done experimentally becomes impossible for practical purposes. Toxin-antitoxin is very slow in producing immunity. According to American authors, it is only after three or six months that immunity should be tested by the Schick reaction. This delay prevents the use of toxin-antitoxin during an epidemic. G. Ramon and G. Illingworth Helie, Paris, France (*Jour. A. M. A.*, Oct. 6, 1928), think it easy to understand that, in the face of all these difficulties, disadvantages and imperfections, the spreading of this method in many countries is seriously retarded. It is also the reason why in France they have not been tempted to employ the toxin-antitoxin mixtures which have been in use in Germany and in the United States since 1913. Anatoxin may be obtained by the action on the toxin of different physical or chemical bodies. One of the most practical methods of converting diphtheric toxin into anatoxin is by means of the combined action of formaldehyde and prolonged heat. For anatoxin to be considered a product obtained from the transformation of toxin, it must have an intrinsic antigen value which can be measured by its flocculence. It shows a very stable antigenic power, confirmed both in vitro (by flocculation) and in vivo. Some specimens of anatoxin made five years ago have retained their antigen value. Diphtheria anatoxin is equally steady in its innocuousness. Certain quantities of anatoxin kept over a period of several years in different conditions did not show any traces of toxicity. The authors discuss preliminary experiments in vaccination with diphtheric anatoxin; practical experiments with vaccination by anatoxin; reactions to anatoxin; re-

sults of vaccination by anatoxin as verified by Schick test; results of vaccination by anatoxin in contaminated areas during an epidemic, and directions for the use of vaccination by anatoxin.

SYNTHETIC SUBSTITUTE FOR EPHEDRINE

With the comparatively simple and inexpensive synthesis of phenylethanolamine sulphate by a new method, Hyman Miller and George Piness, Los Angeles (*Journal A. M. A.*, Oct. 6, 1928), say they have at hand a drug comparable pharmacologically to ephedrine but considerably less toxic. Clinical evidence points to the inactivity of phenylethanolamine sulphate on oral administration, and to an advantageously weak pressor but disappointingly weak bronchodilator effect on hypodermic injection. The field of the greatest usefulness of phenylethanolamine sulphate in therapeutics is apparently as a topical application in the nose, in which its activity is in every way comparable to that of ephedrine. The addition of a new drug to the already overcrowded pharmacopeia requires considerable justification. This justification, they believe, may well be found in the evidence here presented.

ASCARIS LUMBRICOIDES INFESTATION WITH EXTREME ANEMIA

H. E. Bardenwerper, Milwaukee (*Journal A. M. A.*, Oct. 6, 1928), says that the presence of *Ascaris* in children may produce grave results. The blood picture must not be confused with that of pernicious anemia. Failure of hematogenic treatment to produce results should lead to intensified search for the cause of the anemia. Transfusion offers a readily available means of maintaining life in desperate cases till vermifuges may be brought into action. The possible present tendency to overlook worms as serious invaders, should be replaced empiric treatment with vermifuges.